This listing of claims will replace all prior versions and listings of claims in this application:

a) Listing of Claims

What is claimed is:

1. (Withdrawn) A welding apparatus for a submerged arc welding process comprising: a welding gun having means for feeding a tubular electrode into the welding gun; and the tubular electrode formulated for use in the submerged arc welding process and having a sheath encapsulating a core with a composition selected from the group of non-metallic compounds consisting of Al_2O_3, Na_2O_3, $MgCO_3$, MgAl, CaF_2, $CaCO_3$, CaF_2, MgO and combinations thereof, wherein the total percentage of one or more non-metallic compounds in the core composition ranges from about 1% Wt to about 30% Wt.

2. (Withdrawn) The welding apparatus as in claim 1, wherein the total percentage of one or more non-metallic compounds ranges between 5% Wt and 15% Wt.

3. (Withdrawn) The welding apparatus of claim 1, wherein the non-metallic compounds are Al_2O_3 and Na_2O_3 with the total percentage of 14% Wt.

4. (Withdrawn) The welding apparatus of claim 1, wherein the means for feeding the tubular electrode into the welding gun comprise a wire drive and a wire reel.

5. (Withdrawn) A submerged arc welding process comprising: providing a submerged arc welding apparatus with means for feeding an tubular electrode into the welding apparatus; depositing a flux onto a work piece; submerging the tubular electrode into the flux; forming an arc between the

tubular electrode and the work piece by coupling the submerged arc welding apparatus to a power source; feeding the tubular electrode into the welding apparatus, the tubular electrode having a sheath encapsulating a core with a composition selected from the group of non-metallic compounds consisting of Al_2O_3, Na_2O_3, $MgCO_3$, MgAl, CaF_2, $CaCO_3$, CaF_2, MgO and combinations thereof, wherein the total percentage of one or more non-metallic compounds in the core composition ranges from about 1% Wt to about 30% Wt; and forming a weld on the work piece by melting the work piece, the flux and the tip of the tubular electrode using the heat generated by the arc.

6. (Withdrawn) The method of claim 5, further comprising moving the welding apparatus along the work piece.

7. (Withdrawn) The method of claim 5, wherein the work piece is a carbon steel.

8. (Withdrawn) The method of claim 5, wherein the total percentage of one or more non-metallic compounds ranges between 5% Wt and 15% Wt.

9. (Withdrawn) The method of claim 5, wherein the non-metallic compounds are Al_2O_3 and Na_2O_3 with the total percentage of 14% Wt.

10. (Original) A tubular weld wire comprising: a steel sheath encapsulating a core; the core formulated for submerged arc welding and comprising one or more non-metallic compounds selected from the group of non-metallic compounds consisting of Al_2O_3, Na_2O_3, $MgCO_3$, MgAl, CaF_2, $CaCO_3$, CaF_2, MgO and combinations thereof, wherein the total percentage of one or more non-metallic compounds in the core

composition ranges from about 1% Wt to about 30% Wt.

11. (Original) The tubular weld wire of claim 10, wherein the core composition further comprises compacted Fe, FeMg, and FeSi.

12. (Original) The tubular weld wire of claim 10, wherein the total percentage of one or more non-metallic compounds ranges between 5% Wt and 15% Wt.

13. (Original) The tubular weld wire of claim 10. wherein the non-metallic compounds are and Na_2O_3 with the total percentage of 14% Wt.

14. (Withdrawn) A welding apparatus for a submerged arc welding process comprising: a welding gun having means for feeding a tubular electrode into the welding gun; and the tubular electrode formulated for welding low carbon steels with a percentage of C being up to 0.15% in the submerged arc welding process and having a sheath encapsulating a core with a composition selected from the group of non-metallic compounds consisting of Al_2O_3, Na_2O_3, $MgCO_3$, MgAl, CaF_2, $CaCO_3$, CaF_2, MgO and combinations thereof, wherein the total percentage of one or more non-metallic compounds in the core composition ranges from about 1% Wt to about 30% Wt.

15. (Withdrawn) The welding apparatus of claim 14, wherein the tubular electrode is also formulated for welding low alloy steels with a percentage of C being up to 0.15% in the submerged arc welding process.

16. (Withdrawn) The welding apparatus of claim 14, wherein the total percentage of one or more non-metallic compounds ranges between 5% Wt and 15% Wt.

17. (Withdrawn) The welding apparatus of claim 15, wherein the total percentage of one or more non-metallic compounds ranges between 5% Wt and 15% Wt.

18. (Withdrawn) A submerged arc welding process comprising: providing a submerged arc welding apparatus with means for feeding an tubular electrode into the welding apparatus; depositing a flux onto a work piece of low carbon steel or low alloy steel with a percentage of C being up to 0.15%; submerging the tubular electrode into the flux; forming an arc between the tubular electrode and the work piece by coupling the submerged arc welding apparatus to a power source; feeding the tubular electrode into the welding apparatus, the tubular electrode having a sheath encapsulating a core with a composition selected from the group of non-metallic compounds consisting of Al_2O_3, Na_2O_3, $MgCO_3$, MgAl, CaF_2, $CaCO_3$, CaF_2, MgO and combinations thereof, wherein the total percentage of one or more non-metallic compounds in the core composition ranges from about 1% Wt to about 30% Wt; and forming a weld on the work piece by melting the work piece, the flux and the tip of the tubular electrode using the heat generated by the arc.

19. (Withdrawn) The method of claim 18, wherein the total percentage of one or more non-metallic compounds ranges between 5% Wt and 15% Wt.

20. (Withdrawn) The method of claim 18, wherein the non-metallic compounds are and Na_2O_3 with the total percentage of 14% Wt.